

The Bally Professional Arcade (BPA) was a development of the Bally Manufacturing Co., an originator of the pin ball machine, and in 1977 a leader in mechanical and electronic arcade games. Setting up a Consumer Products Division, they utilized the programming talents of the Dave Nutting Associates (DNA), and the production facilities of the E. F. Johnson Co., to develop a versatile arcade game system for home use. Plug-in game cartridges of cassette size would be supplied, and a normal television receiver would be used for the display. Utilizing a Zilog Z80 processor, 8K of ROM, and 4K of RAM, the unit had four built-in programs, and came with two hand controllers (and capability for two more) and an alphanumeric keypad for data entry. Output was a television signal to NTSC standards, and would input to either channel 3 or 4. While announced in mid-1977, production problems delayed actual deliveries until January of 1978. In October, Bally presented a cartridge containing "Tiny BASIC" (6002) which would allow access to the cpu, and owners could then enter their own programs into the machine. The language was a subset of Dr. Li Chen Wang's "Palo Alto Tiny BASIC", suitably modified by the DNA organization.

About this time, the ARCADIAN began publishing on a monthly basis. Growing out of a small newsletter that resulted from an ad in *On-Line* self'n'swap paper, the paper provided a means for owners to communicate with each other, as numerous programs and tutorials were presented to the benefit and knowledge of all.

Expectations were high in the first year as Bally had indicated from their initial advertising in late 1977 that there would be an "Add-On" device, which would have a full-sized keyboard, higher levels of memory (in the 20-32K range), and a new language. This "Level III" system (the base BPA plus 6002 BASIC was Level II) had been developed by the programmers at DNA. The language for this unit was to be GRAFIX, accentuating graphics capabilities. Developed by Dr. Tom DiFanti and Nola Donato of the University of Illinois, and Jay Fenton of DNA, it was a rewrite of an earlier language, GRASS32. Dr. DiFanti had written this language for his 1974 thesis at the university, and it was utilized in some of the special effects in *Star Wars*. GRASS had been written for the PDP computer and had to be rewritten for use by the Z80.

Game cartridges were produced and marketed, generally based on the full sized arcade games. A cartridge would have a ROM chip of up to 8K memory, and had one or two games programmed in it.

However, towards the end of 1979, corporate Bally was looking towards a new direction - casino operations - and had purchased some real estate in Atlantic City. Accordingly, the Consumer Products Division became "available", and after some false starts, a startup called Astrovision was set up and purchased the whole operation in 1980.

Astrovision then produced a new BASIC cartridge (6004) which included a built-in cassette tape input/output facility (replacing separate bits of hardware of the 6002), and speed of data transfer was increased from 300 baud to 2000 baud. New game cartridges continued to be produced.

Because of the cassette interface, programs could be shared via the mails, and subscribers mailed their inventions to the ARCADIAN. In order to stimulate user activity, practically everything submitted was printed, for other subscribers to try. We were fortunate in having knowledgeable subscribers who wrote tutorial articles to explain the workings of the machine and the language. Then we were successful in transmitting programs over the telephone, with recorders speaking to each other. A break-through occurred when we were able to pass program listings directly from the BPA to a printer, reducing the chance of types to zero.

In mid-'81, we began a contest for subscriber-generated programs, with \$100. prizes. As each contest was completed, the winner would replace the most-senior judge on the team of five. When subscriber-generated programs became rather sophisticated, we created a "Best of ARCADIAN, 1980" tape, with authors receiving royalties from the sales of these tapes, which are still available (but royalties have ceased).

Meanwhile, some subscribers were interested in producing their own material for sale to 'cade owners as a number of third-party vendors sprang up and produced games, utilities, and memory additions. One of these vendors produced a cartridge which allowed programmers to input machine code directly into the Z80 cpu.

Virtually all cartridges were invented/developed by the programming team at DNA, who also provided Bally with the programs for the full size games machines. A very talented group, they were anxious to get the BASIC, and later Grafix/CRASS languages out. Under the leadership of Jay Fenton, they designed and implemented the operating system for the BPA, and redesigned the BASIC cartridge - later going on to create the Extended BASIC which was used with the Viper and Blue Ram memory additions. Jay continued to work on a "Hot Rod BALLY BASIC" and a "Color BASIC" system, neither of which went into production. Other people on the DNA staff were the project manager, Jeff Frederiksen; and Bob Ogden, Rickey Speece, Larry Cuba, Scot Norris, and Dick Ainsworth. Also involved through the U of I were Frank Dietrich, Jane Veedor, and Zuzsanna Molnar.

1982 was a bad year for Astrovision (who changed their name to Astrocade in 1981) - while sales were up \$2 million over 1981, about \$4 million was tied up in disputes. Nitron Corp. became another player in the Astrocade group in a rather unusual arrangement. Nitron bought all of Astrocade's inventory, and contracted to purchase parts, burn chips, assemble units, and sell them back to Astrocade, who would sell the product to retailers. This gave Astrocade some deeply needed cash, but made them highly dependent on Nitron's performance. In the event, Astrocade went into final bankruptcy in 1984, and Nitron was next in 1985. Bally itself moved out of the pinball machine business in 1988 and concentrated on gaming and fitness salons.

Seeing the handwriting on the wall, the ARCADIAN went quarterly in 1985, and then ceased publication in 1986. The subscriber base was continually diminishing, and there were no new BPA sales to generate new owners.

Production of the ARCADIAN was very satisfying. It increased my knowledge of the computer world, enabled me to meet some very interesting people, upgraded my business skills, allowed me to play with new toys, and provided me with a warm feeling in knowing that my efforts had enabled some subscribers to become entrepreneurs in designing and selling programs and hardware, even to making career changes. Hopefully these were just stepping stones to something better.